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硕　士　学　位　论　文

喀麦隆河口区域渔业可持续发展管理研究

Sustainable Development Challenges in Cameroon Estuarine complex and Opportunities for Integrated Management: Focus on the fisheries sector

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List of Abbreviations

CZCSV - Veterinary centres for zootechnical and sanitary control
DAEPIA - Sub-divisional Delegations of Livestock, Fisheries and Animal Industries
DDEPIA - Divisional Delegation of Livestock, Fisheries and Animal Industries
DFID – Department For International Development
DREPIA - Regional Delegation of Livestock, Fisheries and Animal Industries
EEZ – Exclusive Economic Zone
FAO – Food and Agricultural Organization of the U.N
FCFA – Central African Financial Community (Unit of Cameroonian currency – 450 FCFA=USD 1)
FREMP – Fraser River Estuary Management Plan
GCLME – Guinea Current Large Marine Ecosystem
ICM – Integrated Coastal Management
IPCC – Inter-governmental Panel on Climate Change
IPCC-WGI - Inter-governmental Panel on Climate Change – Working Group I
IUCN – International Conservation Union
MINEPIA – Ministry of Livestock, Fisheries and Animal Industries
NERRS - National Estuarine research reserve system
NOAA – National Oceanic and Atmospheric Administration
OECD – Organization of Economic Cooperation and Development
POPs – Persistent Organic Pollutants
S.D – Sustainable Development
S.L – Sustainable Livelihoods
TBT - Tri-butyl – Tin
UNCED – United Nations Conference on Environment and Development
UNFCCC – United Nations Frame work Convention on Climate Change
USCOP – United Nations Commission on Ocean Policy
WCED – World Conference on Environment and Development
WHO – World Health Organization
WSSD – World Summit on Sustainable Development

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Abstract

The economy of Cameroon as well as most other developing countries is still entirely natural resource-based, necessitating huge population concentrations, especially of youthful age groups, in areas endowed with such natural resources, especially coastal and marine ecosystems. Estuarine areas for example are centres of great socio-economic prospects for current and future generations. This study was conducted in the Cameroon estuary which comprises a variety of forms including; lagoons, mangrove swamps, creeks, mud flats, sand bars and marshes. The system therefore presents favourable ecological conditions for the evolution of a very productive system in terms of abundant fish stocks, prawns, shrimps and other valuable aquatic resources such as mangroves, mainly due to the deposition of nutrients from the numerous rivers emptying into it. Such natural endowments have made the estuary an area of immense socio-economic, cultural and political significance to the local communities inhabiting it and to the Cameroonian nation as a whole. Politically, the estuary accommodates the City of Douala, and serves as a major gateway into Cameroon. As a result, it hosts the biggest and main international commercial seaport of the country, located on River Wouri, 20 km from the sea, prompting Douala to claim the status of economic capital of Cameroon. Socio-economically, Douala contains about 95% of all the major industrial and commercial activities, with the Douala seaport handling 95% of all freight moving into or out of the country; as well as the largest urban population of the country, about 3 million people. The study however reveals that fishing (artisanal) is indisputably the most important socio-economic sector, impacting directly and indirectly on the lives of the large portions of the populations involved in the long chain of activities linked to it and/or consuming the wide variety of products ensuing from it. Fish represent the principal source of protein for the populations of the littoral region (50%), particularly the poorer segments of the population. In 2000 for example, fish consumption was estimated at 14.3 kg/person/yr, compared with all other sources of animal protein put together (beef, pork, chicken) estimated at 13.8 kg/person/yr. The fisheries sector is also an important source of employment and revenue to fishers and other socio-professional groups involved in production, harvesting and landing site-based activities, and who depend on it for their entire livelihoods, together with their dependents, in some of the estuary's most populated communities, such as Youpwe, Bonaberi and the 47 fishing villages that constitute Douala VI subdivision. At the national level fisheries and

coastal resources account for the most important source of non oil export revenues and highly demanded by land-locked Central African states such as Chad and Central African Republic. The study further reveals that despite the enormous importance and potentials of the Cameroon estuary and the fisheries sector therein, the ecosystem is under intense pressure, representing serious and complex challenges to sustainable development. The pressures emanate from the numerous conflicting terrestrial and aquatic estuarine uses, including; uncontrolled, poorly executed wetland reclamation projects and unregulated resource exploitation (fishing and mangroves, etc.); indiscriminate residential waste disposal; industrial and agricultural pollution; etc., resulting in qualitative and quantitative depletion of the very resource-base on which the human populations inhabiting the estuary depend, and seriously impeding the economic growth of the area. Impacts of pollution and degradation of the Cameroon estuarine environment based on a study by IUCN in 1991 are frightening, and include:

- Decrease in fish population (about 15%/year) either due to direct mortality, migration or over-fishing;
- 2.6% annual decrease in area covered by mangroves;
- High contents of Tri-butyl – Tin (TBT), an anti-algae paint used in shipyards found in the flesh of molluscs and reduction in the harvest of crustaceans.

This study therefore explores the root causes of the sustainable development challenges experienced in the Cameroon estuary, with emphasis on the fisheries sector, and in particular, the livelihood aspects of the estuary's poor fishing communities who live in the rural areas, and in the low-lying often inundated parts of the estuarine urban landscape, characterized by indiscriminate waste disposal, and who face very high costs of living and weak financial status, suffer from poor health, lack access to fishing grounds dominated by foreigners, and have limited access or are completely lacking in basic social amenities such as schools, health centres, markets and hygiene and sanitation facilities.

The root causes of environmental and resource degradation have been found to be the poor, centralized, sectoral and top – bottom approach to management that characterizes all sectors of the economic and social life of Cameroon.This is coupled with a fuzzy application of the decentralization process, the lack-luster attitude and limited expertise of resource and environmental management officials.

Based on the research findings, an integrated management model for sustainable utilization and development of the Cameroon estuary has been proposed. The Integrated Coastal management framework has been developed for the sustainable management of fisheries in particular, and the entire

estuarine ecosystem in general. In order to make the improvement of community livelihoods the focus of such a development model, the ICM framework has been incorporated into the DFID Framework for Sustainable Livelihoods. This has the potential to ensure the sustainable development of the Cameroon estuary and enhance the achievement of the MDGs as prescribed by different international Conferences and conventions, especially; UNCLOS of 1982, WCED of 1987, Agenda 21 of the UNCED, 1992, and the WSSD, 2002.

Key words: sustainable development; sustainable livelihoods; challenges; Cameroon estuarine complex; fisheries; Integrated Coastal Management.

摘要

海岸带地区，通常被视为世界上拥有巨大财富和具有社会经济发展前景的地区。众多较具生产力的农业种植活动及其他以传统资源为基础的活动如沿海渔业、养殖业、林业等都位于河流三角洲和沿海平原地区。周边还存在如工业，航运，旅游和采矿等活动。像其他许多发展中国家一样，喀麦隆的经济仍然处于完全依赖自然资源以及庞大的人口劳动力密度资源特别是年轻人。但这些国家和地区都拥有了许多自然资源，特别是海岸带和海洋生态系统。而海岸带地区一般都是当代和后代的社会经济发展前景很好的中心地区。

本论文重点调查研究了喀麦隆河口地区复杂的生态系统，包括泄湖、红树林、溪流、泥流、沙坝、沼泽地带等生态系统的现状，特别是渔业方面。并提出了生态系统正面临着的巨大压力、以及可持续发展面对的严重和复杂的挑战。论文还探讨了造成喀麦隆河口地区的可持续发展挑战的根本原因，强调了渔业方面。基于这些研究成果，论文提出了喀麦隆河口持续利用和发展的综合管理模式。

喀麦隆河口地区现状表现如下：一、资源现状：基于众多河流汇入的营养物质，生态系统显示出有利的生态环境和高生产力系统：丰富的鱼类、虾、蟹和其他如红树林等有价值的水生资源。而喀麦隆大体海岸线的状况正与这相反，上升流作用的减弱导致了生物大量减产。二、研究区 Douala 市的情况：1、政治方面，Douala 市作为喀麦隆的河口城市，它是进入喀麦隆的主要通道。并因此拥有位于 Wouri 河上全国最大的、最主要的国际贸易海港。该海港距海 20 公里，促使 Douala 占据着喀麦隆经济首都的地位。2、社会经济方面，Douala 占据了 95%的全国主要工业和商业活动,其中 Douala 海港承载了 95%的货物进出口，并拥有着全国最多的城镇人口 300 万。三、渔业方面的现状：作为无可争议的最重要的社会经济部分，渔业直接或间接影响着大多数人口的生活，包括参与的有关的一系列的活动或者消费的各种产品活动。鱼类是沿岸地区（50％），特别是贫困人口的人群中蛋白质的主要来源。渔业还是就业、渔民收入和其他社会职业团体的重要来源之一。包括生产、收获和以陆地为基础的活动，以及在一些人口的多河口地区那些依靠其养生的家庭，比如 Douala 地区的 Youpwe，Bonaberi 和 47 个渔村。国家一级渔业和沿海资源是非石油